

BUREAU OF WATER

South Carolina Department of Health and Environmental Control

SHELLFISH MANAGEMENT AREA 16A

2004 ANNUAL UPDATE

Shellfish Sanitation Program

Water Monitoring, Assessment and Protection Division
Environmental Quality Control - Bureau of Water
2600 Bull Street
Columbia, South Carolina 29201

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2004 ANNUAL UPDATE

[Data Thru December 2003]

Shellfish Management Area 16A Shellfish Sanitation Program



Preparers: David Payne, District Program Manager
Shellfish Sanitation Program
Low Country Environmental Quality Control District
104 Parker Drive
Burton, SC 29906

Reviewers/Editors:
David G. Baize, Division Director (and)
Charles Newell, Shellfish Program Manager
Water Monitoring, Assessment, and Protection Division
Environmental Quality Control - Bureau of Water
2600 Bull Street
Columbia, South Carolina 29201

David G. Baize, Division Director
Water Monitoring, Assessment, and Protection Division
Environmental Quality Control - Bureau of Water

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ANNUAL UPDATE
Shellfish Management Area 16A
SCDHEC EQC Bureau of Water

Data Inclusive Dates:

01/01/01 thru 12/31/03

Classification Change:

X Yes No

Shoreline Survey Completed: Yes

(I)ncreased/(D)ecreased/(N)one:

 D Approved

 I Conditionally Approved

 D Restricted

 N Prohibited

Prior Report & Date: Annual -2003

SUMMARY

The majority of sampling stations in Shellfish Management Area 16A showed a slight decline in water quality criteria (increased geometric mean and/or estimated estimated ninetieth percentile values) subsequent to the previous three-year reporting period. The bacteriological water quality data appears to reflect a return to normal rainfall amounts during 2002 and 2003 - following the drought conditions the region experienced during the period 1999 to 2001. For this review period, there will be a downward classification in water quality in that portion of Area 16A represented by Station 13, as well as an upward classification in Coffin Creek (Station 28).

Water quality at Station 13 - Lucy Point Creek at Rock Springs Creek - exceeds the statistical criteria for an Approved classification, with an estimated estimated ninetieth percentile MPN value of 78. Analysis of bacteriological data that excludes results when 24-hour recorded rainfall is greater than or equal to 1.00 inch on the day of sampling, or within 72 hours prior to sample collection, demonstrates that Station 13 should meet approved area criteria when managed based upon this 24-hour rainfall amount (Table 3). A Conditionally Approved Area will therefore be established in Lucy Point Creek between the Area 16A boundary at the Coosaw River and Station 13A (see Area 16A Conditional Area Management Plan).

Water quality at Station 28, in Coffin Creek near the commercial shrimp dock marina administrative closure, meets statistical criteria for an Approved classification. Bacteriological data review for Station 28 indicates that, for the period March 2001 through December 2003, all fecal coliform samples, with the exception of the October 2003, result were less than an MPN value of 43. Portions of Coffin Creek, extraneous to the marina closure zone, will therefore be classified as Approved.

Station 18, Eddings Creek at (Rose Island) Shrimp Dock, meets the statistical criteria for an Approved classification, with an estimated ninetieth percentile MPN of 43. The water quality classification at this station had been Restricted since the 1997 Annual Update. Because of the extreme "borderline" estimated ninetieth percentile value and the possibility that the current water quality is a

temporary oscillation, the harvesting classification at Station 18 will remain Restricted pending next year's review.

INTRODUCTION

PURPOSE AND SCOPE

The authority to regulate the harvest, sanitation, processing and handling of shellfish is granted to the South Carolina Department of Health and Environmental Control by Section 44-1-140 of the Code of Laws of South Carolina, 1976, as amended. The Department promulgated Regulation 61-47 which provides the rules used to implement this authority and outlines the requirements applied in regulating shellfish sanitation in the State. This regulation specifically addresses classification of shellfish harvesting areas and requires that all areas be examined by sanitary and bacteriological surveys and classified into an appropriate shellfish harvesting classification.

The National Shellfish Sanitation Program (NSSP) Guide For The Control Of Molluscan Shellfish is used by the United States Food and Drug Administration (USFDA) to evaluate state shellfish sanitation programs. The NSSP Model Ordinance requires that a sanitary survey be in place for each growing area prior to its use as a source of shellfish for human consumption and prior to the area's classification as Approved, Conditionally Approved, Restricted, or Conditionally Restricted. Each sanitary survey shall be updated on an annual basis and accurately reflect changes which have occurred within the area. Requirement of the annual reevaluation include, at a minimum, field observations of pollution sources, an analysis of water quality data consisting of the past year's data in combination with appropriate previously collected data, review of reports and effluent samples from pollution sources, and review of performance standards for discharges impacting the growing area. A brief report documenting the findings shall also be provided.

The following criteria consistent with the NSSP Model Ordinance and S. C. Regulation 61-47 are used in establishing shellfish harvesting classifications:

Approved - Growing areas shall be classified Approved when the sanitary survey concludes that fecal material, pathogenic microorganisms, and poisonous or deleterious substances are not present in concentrations which would render shellfish unsafe for human consumption. The Approved area classification shall be designated based upon a sanitary survey which includes water samples collected from stations in the designated area adjacent to actual or potential sources of pollution. For waters sampled under adverse pollution conditions, the median fecal coliform Most Probable Number (MPN) or the geometric mean MPN shall not exceed fourteen per one hundred milliliters, and not more than ten percent of the samples shall exceed a fecal coliform MPN of forty-three per one hundred milliliters (per five tube decimal dilution). For waters sampled under a systematic random sampling plan, the geometric mean fecal coliform Most Probable Number (MPN) shall not exceed fourteen per one hundred milliliters, and the estimated ninetieth percentile shall not exceed an MPN of forty three (per five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP

Guidelines.

Conditionally Approved - Growing areas may be classified Conditionally Approved when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river, or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be adopted by the Department prior to classifying an area as Conditionally Approved. Where appropriate, the management plan for each Conditionally Approved area shall include performance standards for sources of controllable pollution, e.g., wastewater treatment and collection systems, evaluation of each source of pollution, and means of rapidly closing and subsequent reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate.

Restricted - Growing areas shall be classified Restricted when sanitary survey data show a limited degree of pollution or the presence of deleterious or poisonous substances to a degree which may cause the water quality to fluctuate unpredictably or at such a frequency that a Conditionally Approved classification is not feasible. Shellfish may be harvested from areas classified as Restricted only for the purposes of relaying or depuration and only by special permit issued by the Department and under Department supervision. For Restricted areas to be utilized as a source of shellstock for depuration, or as source water for depuration, the fecal coliform geometric mean MPN of restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters and not more than ten percent of the samples shall exceed a MPN of two hundred and sixty per one hundred milliliters for a five tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters and the estimated ninetieth percentile shall not exceed an MPN of two hundred and sixty (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP guidelines.

Conditionally Restricted - Growing areas may be classified Conditionally Restricted when they are subject to temporary conditions of actual or potential pollution. When such events are predictable, as in the malfunction of wastewater treatment facilities, non-point source pollution from rainfall runoff, discharge of a major river, or potential discharges from dock or harbor facilities that may affect water quality, a management plan describing conditions under which harvesting will be allowed shall be prepared by the Department prior to classifying an area as Conditionally Restricted. Where appropriate, the management plan for each Conditionally Restricted area shall include performance standards for sources of controllable pollution (e.g., wastewater treatment and collection systems and an evaluation of each source of pollution) and description of the means of rapidly closing and subsequent reopening areas to shellfish harvesting. Memorandums of agreements shall be a part of these management plans where appropriate. Shellfish may be harvested from areas classified as Conditionally Restricted only for the purposes of relaying or depuration and only by permit issued by the Department and under Department supervision. For Conditionally Restricted areas to be utilized as a source of shellstock for depuration, the fecal coliform geometric mean MPN of Conditionally Restricted waters sampled under adverse pollution conditions shall not exceed eighty-eight per one hundred milliliters and

not more than ten percent of the samples shall exceed a MPN of two hundred and sixty per one hundred milliliters for a five tube decimal dilution test. For waters sampled under a systematic random sampling plan, the fecal coliform geometric mean MPN shall not exceed eighty-eight per one hundred milliliters and the estimated ninetieth percentile shall not exceed an MPN of two hundred and sixty (five tube decimal dilution). Computation of the estimated ninetieth percentile shall be obtained using NSSP guidelines.

Prohibited - Growing areas are classified Prohibited if there is no current sanitary survey or if the sanitary survey or monitoring data show unsafe levels of fecal material, pathogenic microorganisms, or poisonous or deleterious substances in the growing area or indicate that such substances could potentially reach quantities which could render shellfish unfit or unsafe for human consumption.

BACKGROUND INFORMATION

Shellfish Management Area 16A consists of approximately 26,608 acres of shellfish growing area habitat located in Beaufort County. Area 16A includes the Morgan River and its tributaries, including Lucy Point, Parrot, Jenkins, Eddings, Village, and Coffin Creeks.

The area's northern boundary begins at the confluence of Lucy Point Creek and Coosaw River (Sam's Point) and follows the southern shoreline of Coosaw River and Morgan Island. The eastern boundary is defined by St. Helena Sound and the Atlantic Ocean. The southern boundary begins on the northwest shore of Harbor Island and follows Hwy 21 to Seaside Road (SR-77) and then is defined by an imaginary line extending to Land's End Road (SR-45). The boundary then continues back to Hwy 21. The southern boundary follows Hwy 21 to its intersection with SC 802, which defines the western boundary. The western boundary runs across Lady's Island along the western shore of Lucy Creek ending at Sam's Point.

Area 16A is largely rural, with expansive areas of agricultural land (particularly on St. Helena Island) used for growing tomatoes, cucumbers, and sod. The western boundary on Lady's Island is more suburban in character. Shrimp boat docks are located on Coffin (marina closure), Eddings (marina closure), and Jenkins Creeks (individual docks). A residential development on Dataw Island includes two golf courses and a marina.

The harvesting classification of Area 16A prior to this survey was as follows:

Prohibited: (Administrative closure)

- 1) Dataw Marina closure zone.
- 2) Coffin Creek commercial docks
- 3) Eddings Creek (Rose Island) commercial docks

Restricted:

- 1) Rock Springs Creek, from its headwaters to its confluence with Lucy Point Creek;
- 2) Eddings Creek, from its headwaters to Station 23

3) Coffin Creek, from its headwaters to its confluence with Morgan River;

Conditionally Approved: None

Approved: The remaining waters of Area 16.

Station Addition/Deactivation/Modification: None

The shellfish industry in South Carolina is based mainly on the harvest of the eastern oyster (*Crassostrea virginica*) and hard clams (*Mercenaria mercenaria*). Areas in South Carolina designated for commercial harvest by the South Carolina Department of Natural Resources (SCDNR) are defined as State Shellfish Grounds, Culture Permit areas, Mariculture Permit areas, and Kings Grant areas. There are four shellfish Culture Permit areas in Area 16A. C-114 and C-122 are leased to L.P. Maggioni & Company. C-128 is leased to Charlie Brown Seafood and C-131 is leased to Thomas Backman. There are four Mariculture Permit areas in Area 16A. Three are located adjacent to the Coffin Point State Shellfish Ground (S-127). M-109 is leased to Joel Morris, M-110 is leased to Charles Hall, and M-111 is leased to Joseph Leland. The fourth, M-112, in Jenkins Creek, is leased to Joel Morris.

The general public is allowed to harvest on three SSGs within Area 16. S-065 is located on Morgan Island, S-124 is in Morgan River, and S-127 is at Coffin Point. Recreational harvesting is allowed for clams and oysters in all areas, and commercial harvesting by licensed individuals is allowed, subject to conditions established by SCDNR.

Shellfish harvesting season in South Carolina extends from September 16 through May 15, although actual dates may vary. SCDNR has the authority to alter the shellfish harvesting season for management purposes. The South Carolina Department of Health and Environmental Control has the authority to prohibit shellfish harvesting when necessary to ensure that all shellfish harvested in South Carolina waters are safe for human consumption.

POLLUTION SOURCE SURVEY

SURVEY PROCEDURES

Shoreline surveys of Area 16A were conducted by the Low Country District Shellfish Sanitation staff, by watercraft, vehicle, and on foot, during the survey period and are ongoing.

POINT SOURCE POLLUTION

Major sources of actual or potential pollution (see Figure 4):

PERMITTED FACILITIES	PERMIT #/TYPE/ DISCHARGE
BJW&SA St. Helena WWTP	SC0039811/0.60MGD/spray irrigation

PERMITTED FACILITIES	PERMIT #/TYPE/ DISCHARGE
Dataw Island Marina	Marina/ with pumpout (closure 60' from ends)
Coffin Creek Commercial Docks	Marina (shrimp docks – closure 472')
Rose Island Commercial Docks	Marina (shrimp docks – closure 352' from center)

- A. **Municipal and Community Waste Treatment Facilities** - New sewer lines have been installed from Lady's Island and along Hwy 21 to the St. Helena WWTP, serving schools, businesses, and new subdivisions. Lady's Island Middle School formally had an aerated lagoon system with chlorination with tile field disposal of treated effluent. The discharge from this facility has been eliminated through incorporation into the BJW&SA St. Helena WWTP.

The recently upgraded BJW&SA St. Helena WWTP is an extended aeration type system with gas chlorination. Treated effluent is pumped to Dataw Island where it is spray irrigated on golf courses. A new spray site has been added on a sod farm in Area 16B.

- B. **Industrial wastes** - There are no permitted industrial discharges in Area 16A.
- C. **Marinas** - S.C. Regulation 61-47, Shellfish defines *Marina* as “any water area with a structure (docks, basin, floating docks, etc.) which is: 1) used for docking or otherwise mooring vessels; and, 2) constructed to provide temporary or permanent docking space for more than ten boats, or has more than 200 linear feet of docking space.” There is a permitted marina at Dataw Island which has a marine sewage pumpout facility. There are commercial docks located in Eddings and Coffin Creeks that meet the current definition of marina. Closures around these facilities have been established.
- D. **Radionuclides** - Sources of radionuclides have not been identified within Area 16A, and radionuclide monitoring has not been conducted. No other sources of poisonous or deleterious substances have been identified within the area.

NONPOINT SOURCE POLLUTION

- A. **Stormwater** - Stormwater runoff impacts water quality by transporting fecal coliform bacteria (and other pollutants) from land to the shellfish growing area. Stormwater from roads, residences, and agricultural land is directed to the lowest point of elevation which is often the nearest creek or marsh. In addition, there are freshwater wetland areas, ditches, and impoundments that drain into tidal creeks.

Most land disturbing activities in South Carolina must comply with the Stormwater Management and Sediment Reduction Act of 1991. The final regulations, effective on June 26, 1992, establish the procedures and minimum standards for a statewide stormwater management

program. For activities in the eight coastal counties, additional water quality requirements are imposed. For all projects, regardless of size, which are located within one-half mile of a receiving water body in the coastal zone, the criteria for permanent water quality ponds having a permanent pool is that they are designed to store the first 2 inch of runoff from the entire site over a 24-hour period or storage of the first one inch of runoff from the built-upon portion of the property, whichever is greater. Storage may be accomplished through retention, detention, or infiltration systems, as appropriate for the specific site. In addition, for those projects which are located within 1000 feet of shellfish beds, the first one and one half inches of runoff from the built-upon portion of the property must be retained on site. Since 1992, these regulations have been applied to the development of residential subdivisions, golf courses, and business areas.

- B. Agricultural Waste** - Small herds of cattle are located near the headwaters of Eddings Creek and Coffin Point. Further investigation of these areas will be conducted to determine what impact they have on water quality.
- C. Individual Sewage Treatment and Disposal (ISTD) Systems** - The majority of homes adjacent to Area 16A utilize ISTDs for wastewater disposal.
- D. Wildlife and Domestic Animals** - This area supports populations of white-tailed deer, raccoons, wading birds, migratory waterfowl, and other wildlife, which may contribute to fecal coliform levels in some areas. Domestic animals present in the area include dogs, cats, horses, and goats.
- E. Boat Traffic** - The Morgan River provides access to St. Helena Sound and the Atlantic Ocean for shrimp boats and recreational boaters. There are numerous private boat docks throughout Area 16A.
- F. Hydrographic and Habitat Modification** - Hydrographic and habitat modification in estuarine areas requires both State and Federal approval.
- G. Marine Biotoxins** - There have been no documented occurrences of toxic algae affecting water quality in Area 16A. The Department participates in a State Task Force on Toxic Algae and maintains a toxic algae emergency response team.

HYDROGRAPHIC AND METEOROLOGICAL CHARACTERISTICS

PHYSIOGRAPHY

Area 16A is part of the St. Helena Sound estuary. The estuary is a drowned river valley/bar built system containing numerous marsh islands and tidal creeks. It is among the largest of the South Atlantic estuaries. The average depth of the estuary is approximately 12 feet at mid-tide level.

Extensive shallow areas and numerous tidal flats exist within the estuary. The AIWW (12 feet at MLW) is the only maintained navigational channel (NOAA, 1994).

Tides - Tides in Area 16A are semidiurnal, consisting of two low and high tides each lunar day. Mean tidal range is 5.9 feet during normal tides and 6.9 feet during spring tides. The greatest tidal ranges of the year typically occur around full moon during the months of September through December. There is considerable variation in the normal tide range due to the prevailing strength and direction of winds.

Rainfall - Rainfall data used in this survey is collected at a weather station located at the City of Beaufort WWTP (Station 380559- Beaufort 7 SW). The rainfall gauge is typically read at about 7:00 AM and the rainfall amount is recorded for that date. As most shellfish samples are collected after 7:00 AM, this report's rainfall summary table includes rainfall data for the sample date + 24 hours. Rainfall recorded for the sample date + 24 hours may correlate better and help explain elevated fecal coliform concentrations in sample results, particularly if there was zero rainfall recorded on the morning of, or a day prior to, sampling. The rainfall summary is included in Table #5.

Annual rainfall recorded at the Beaufort 7SW weather station was significantly below the 30-year normal amount for 2000 and 2001 (see Chart Beaufort Annual Rainfall). Below normal rainfall continued through May 2002 and, by August 2002, the drought status of all 46 counties in the state, including Beaufort and Colleton, had been upgraded to extreme. Above normal rainfall beginning in late August, however, led the S.C. Drought Response Committee to downgrade the drought status statewide and remove the drought declaration for Beaufort, Charleston, and Colleton counties on November 21, 2002.

Annual rainfall is normally about 51.15", with August being the wettest month. Charts showing yearly rainfall amounts for the years 1998 through 2003 are attached. Approximately 40% of the annual rainfall falls in the three month period from June to August. Weather patterns during this time period are often characterized by thunderstorms and shower activity of a short duration. In addition, these three months also have the highest numbers of days with rainfall greater than 1". The months of December through March historically have the greatest number of days with rainfall exceeding 0.10" and 0.50". Rainfall events during these months are typically of a longer duration.

Winds - The prevailing wind direction between February and September ranges between South and South Southwest (180 to 200 degrees) and between October and January is North Northeast (20 degrees). The annual mean wind speed is 8.5 MPH, with August having the lowest (7.3 MPH) and March the highest (10.0 MPH) mean wind speed.

River discharges - The South Edisto River originates in the midlands of South Carolina and flows approximately 140 miles through the piedmont and coastal plain until it enters the Atlantic Ocean at Edisto Beach. It is the St. Helena Sound estuary's major freshwater source. The river discharges at an average rate of 2631 cubic feet per second. The Ashepoo River and Salkahatchie/Combahee Rivers also contribute to freshwater input, but to a lesser degree.

WATER QUALITY STUDIES

DESCRIPTION OF THE PROGRAM

The Department currently utilizes a systematic random sampling (SRS) strategy within Area 16A in lieu of sampling under adverse pollution conditions. In order to comply with NSSP guidelines, a minimum of thirty samples are required to be collected and analyzed from each station during the review period. Sampling dates are computer generated prior to the beginning of each quarterly period thereby insuring random selection with respect to tidal stage and weather. Day of week selection criteria is limited to Mondays, Tuesdays, and Wednesdays due to shipping requirements and laboratory manpower constraints. Sample schedules are rarely altered.

During July, 1998, an updated data analysis procedure was formalized. Samples utilized for classification purposes are limited to those samples collected in accordance with the SRS for a 36-month period beginning January 1 and ending December 31. This allows for a maximum of 36 samples per station yet provides a six-sample cushion (above the NSSP required 30 minimum) for broken samples, lab error, breakdowns, etc. This also allows each annual report to meet the NSSP Triennial Review sampling criteria.

Six hundred eleven (611) routine surface water quality samples (<1.0 ft. deep) were collected for bacteriological analyses at 17 active water quality sampling stations in Area 16A during the period 01/01/01 through 12/31/03. The samples were collected in 120 ml amber glass bottles, immediately placed on ice and transported by bus to the South Carolina Department of Health and Environmental Control's Trident District Environmental Quality Control laboratory at North Charleston, South Carolina or the Low Country District Environmental Quality Control laboratory at Beaufort, South Carolina. An additional 120 ml water sample was included with each shipment as a temperature control. Upon receipt at the laboratory, sample sets that exceeded a 30-hour holding time or contained a temperature control > 10 degrees C. were discarded.

Samples collected after September 1, 1986 have been analyzed using the five tube/three dilution modified A-1 method described by Nuefeld (1985). Surface water temperatures were measured utilizing hand-held, laboratory-quality calibrated centigrade thermometers. Salinity measurements were measured in the laboratory using automatic temperature compensated refractometers. Additional field data include ambient air temperature, wind direction, tidal stage and date and time of sampling. Tidal stages were determined Nautical Software's Tides and Currents, Version 2 (1996).

MONITORING RESULTS

Stations 8, 9, 10, 11, 13A, 13B, 14, 18, 23, 24, 25, 27, 28, 30, and 32 meet the statistical criteria for Approved classification. Stations 13 and 19 exceeded a fecal coliform MPN geometric mean value of 14 or a fecal coliform MPN estimated ninetieth percentile value of 43, thus meeting the statistical criteria for a Restricted classification.

CONCLUSIONS

Based on review of fecal coliform bacteriological data and the pollution source survey, Area 16A is impacted by three sources of actual or potential pollution.

NONPOINT SOURCE RUNOFF

Stormwater runoff is the major source of fecal coliform bacteria contamination in Area 16A. The impact of rainfall on water quality is greater in tidal creeks such as Coffin and Eddings Creeks than in the more open water areas of the Morgan River. Possible sources of fecal coliform bacteria contamination include failing septic systems, pets, domestic animals such as horses and cows, wildlife, and drainage from roads and freshwater wetlands.

Portions of Area 16A receive appreciable freshwater inflow from the Combahee River and St. Helena Sound, particularly in the spring. Abnormally high rainfall during the El Niño event in the spring of 1998 caused a dramatic increase in freshwater inflow and lowering of salinity in the St. Helena Sound estuary. This low salinity water was transported throughout Area 16A by tidal exchange.

INDIVIDUAL SEWAGE TREATMENT AND DISPOSAL SYSTEM.

Almost all homes adjacent to shellfish waters in Area 16A are served by ISTDs. Soils in most areas are considered to be suitable for ISTDs and systems should operate properly if maintained. However, many older homes with existing systems may not meet current standards.

RECOMMENDATIONS

Water quality at station 13, Lucy Point Creek at Rock Springs Creek, meets the statistical criteria for a Restricted classification, with an estimated ninetieth percentile MPN value of 78. Analysis of sampling data for the review period was conducted (Table 3). Excluding sample results that had 24-hour rainfall amounts greater than or equal to 1.00 inches on the day of sampling or within 72 hours of sampling, the analysis demonstrates that station 13 will meet Approved criteria when managed according to the Conditional Area Management Plan (see Conditional Area Management Plan). It is recommended that a Conditionally Approved Area be established in Lucy Point Creek between the Area 16A boundary at the confluence with Coosaw River and station 13A.

Station 18, Eddings Creek at (Rose Island) Shrimp Dock, meets the statistical criteria for an Approved classification, with an estimated ninetieth percentile MPN of 43. The water quality classification at this station had been Restricted since the 1997 Annual Update. Because of the “borderline” estimated ninetieth percentile value and the possibility that the current water quality is a temporary oscillation, the harvesting classification at Station 18 is recommended to remain Restricted pending the next three-year review period.

Water quality at Station 28, in Coffin Creek near the commercial shrimp dock marina administrative closure, meets the statistical criteria for an Approved classification. Bacteriological data review for Station 28 indicates that all fecal coliform samples during the period March 2001 through December 2003, with the exception of the October 2003 result, were less than an MPN value of 43. Portions of Coffin Creek, extraneous to the marina closure zone, are therefore recommended to be classified as Approved.

The shoreline survey and bacteriological data review of shellfish Management Area 16A indicates that changes in classification boundary descriptions are appropriate. The growing waters classification of Area 16A will be (see Figure 3):

Prohibited: (Administrative closure)

- 1) Dataw Marina closure zone;
- 2) Coffin Creek commercial docks;
- 3) Eddings Creek (Rose Island) commercial docks.

Restricted:

- 1) Rock Springs Creek, from its headwaters to its confluence with Lucy Point Creek;
- 2) Eddings Creek, from headwaters to Station 23, excluding Prohibited closure zone.

Conditionally Approved:

- 1) Lucy Point Creek, from it's confluence with Coosaw River to Station 13A.

Approved: The remaining waters of Area 16.

Station Addition/Deactivation/Modification: None

Analysis of sampling data for Area 16A demonstrates the probability of a significant impact from rainfall exceeding 4.00" in a 24 hour period. Therefore, a precautionary closure of area 16A will be implemented following rainfall events of greater than 4.00" in a 24 hour period, as measured at the Beaufort-7-SW Weather Station. This methodology is associated with the concept of the Probable Maximum Precipitation (PMP). PMP estimates for the coastal United States has been published in a series of hydro-meteorological reports (HMRs) by the National Weather Service (National Weather Service). PMP estimates for South Carolina's growing areas are derived from HMRs 51, 52, and 53 (National Research Council, 1985).

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TABLE #1
Shellfish Management Area 16A
WATER QUALITY SAMPLING STATIONS DESCRIPTION

<u>Station</u>	<u>Description</u>
08	Morgan River at Village Creek
09	Eddings Creek at Morgan River
10	Parrot Creek at Morgan River
11	Jenkins Creek at Morgan River
13	Lucy Point Creek at Rocky Springs Creek
13a	South Edge of (former) Lucy Point Creek CSZ at Pollution Line
13b	North Edge of (former) Lucy Point Creek CSZ at Pollution Line
14	Doe Creek Behind Coastal Seafood - Behind Dataw Island
18	Eddings Creek at Shrimp Dock
19	Upper Reaches Rock Springs Creek
23	Eddings Creek at Small Tributary Between Stations 9 and 18
24	Jenkins Creek at Right Turn Between Stations 11 and 14
25	Jenkins Creek at Small Unnamed Tributary North Side of Warsaw Island
27	Mouth of Coffin Creek at Morgan River
28	Headwaters of Coffin Creek at Shrimp Docks
30	500 ft. North of Stormwater at Dataw Island Golf Course, Jenkins Creek
32	Village Creek at Fripp Point Community Dock

(Total 17)

Figure 1.
Shellfish Management
Area 16A
Prior Classification

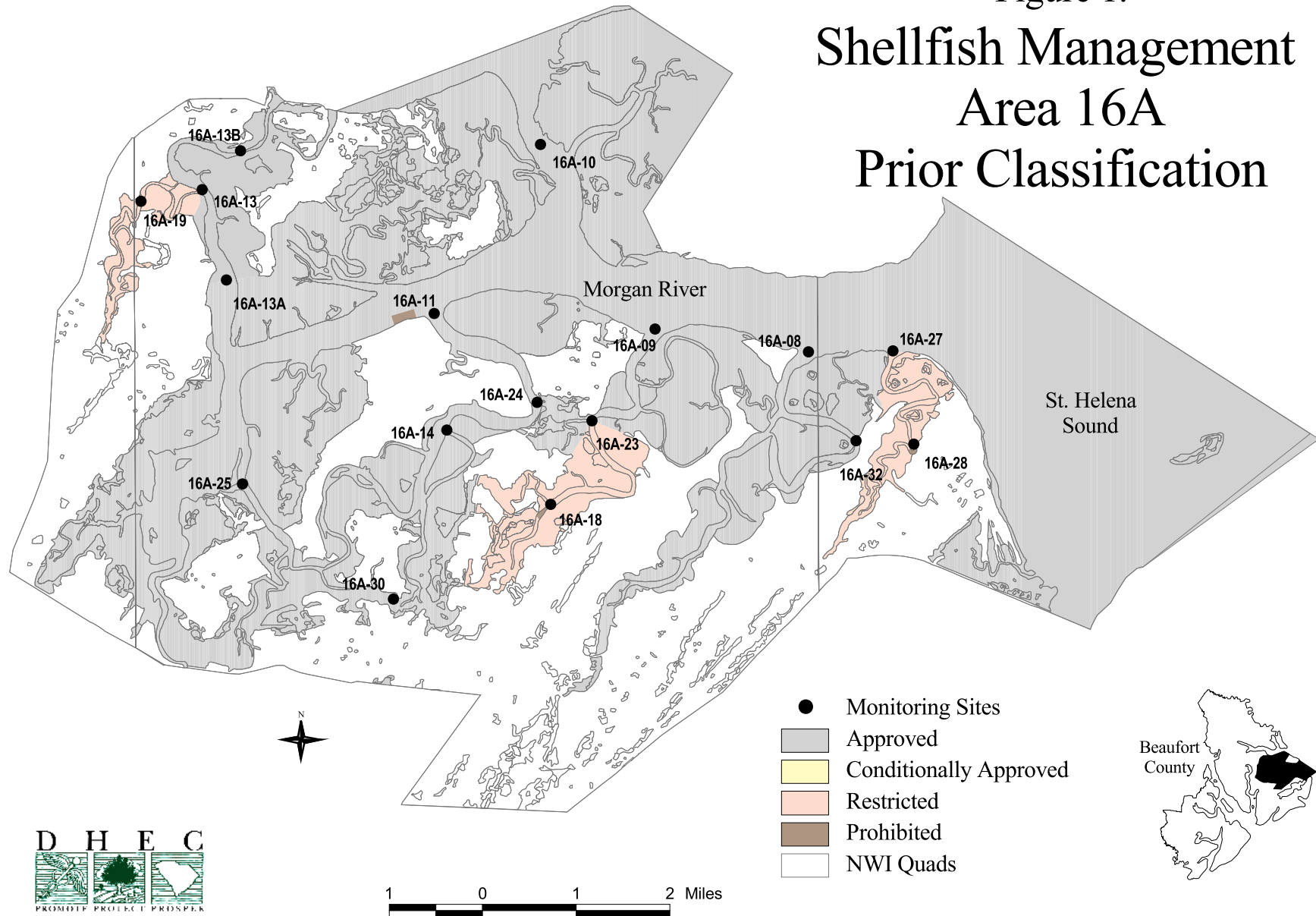


Figure 2.
Shellfish Management
Area 16A
Current Classification

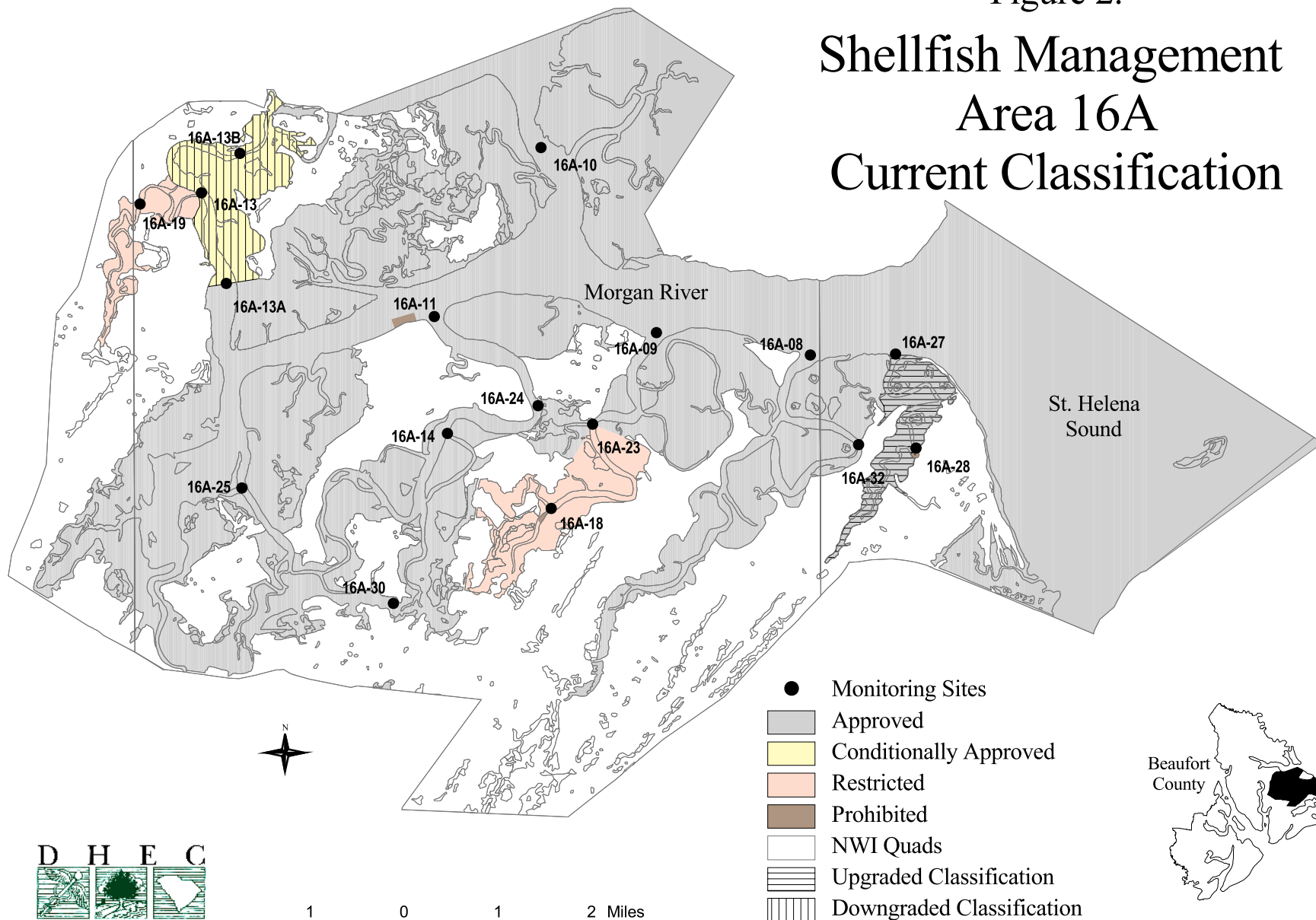


Figure 3.
Shellfish Management
Area 16A
Potential Pollution Sources

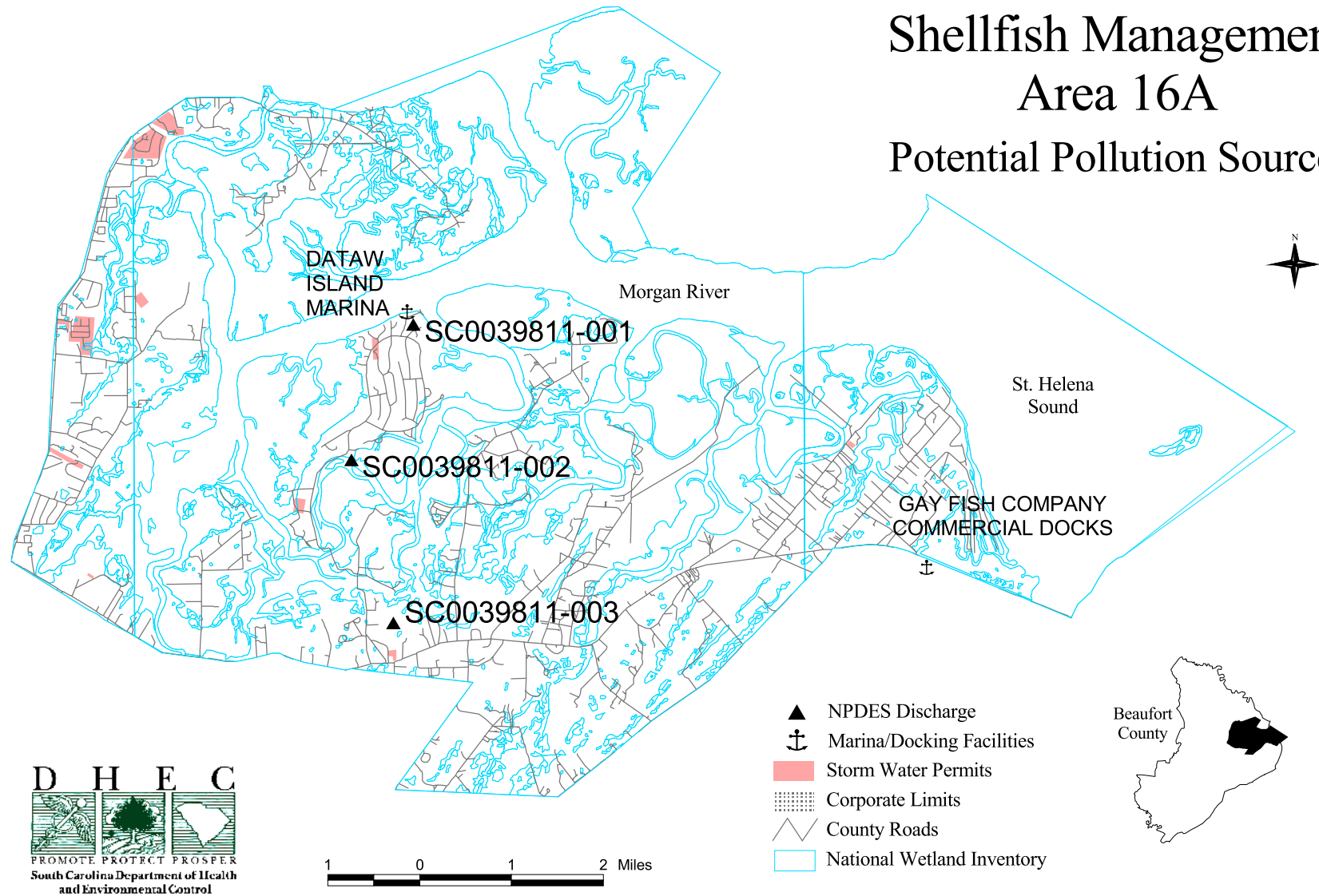


TABLE #2
Shellfish Management Area 16A

FECAL COLIFORM BACTERIOLOGICAL DATA SUMMARY
from Shellfish Water Quality Sampling Stations between

January 1, 2001 and December 31, 2003

Station ?	08	09	10	11	13	13A	13B	14	18	19	23
SAMPLES	36	36	36	36	36	36	36	36	36	36	36
GEO MEAN	4.1	4.1	3.1	3.6	10.9	6.0	6.2	5.0	8.5	18.9	6.5
ESTIMATED 90%ILE	13	11	8	8	78	25	24	17	43	105	24
WATER QLTY	A	A	A	A	R	A	A	A	A	R	A
CLASSIFICATION	A	A	A	A	CA	CA	CA	A	R	R	R

Station ?	24	25	27	28	30	32				
SAMPLES	36	36	36	36	36	35				
GEO MEAN	4.2	6.0	5.4	9.6	4.4	5.0				
ESTIMATED 90%ILE	12	29	21	37	13	15				
WATER QLTY	A	A	A	A	A	A				
CLASSIFICATION	A	A	A	P	A	A				

A - Approved CA - Conditionally Approved R - Restricted
RND - Restricted/No Depuration P - Prohibited

Table 3
SPECIAL DATA SET
Shellfish Management Area 16A

FECAL COLIFORM BACTERIOLOGICAL DATA SUMMARY
From Selected Stations

Excluding sample results collected following rainfall > or = 1.00”
on day of sampling to 72 hours prior to sampling

BETWEEN: January 1, 2002 and December 31, 2002

Station #^o	13	13A	13B						
SAMPLES	30	30	30						
GEO MEAN	7.8	5.4	4.7						
ESTIMATED NINETIETH %ILE	36	21	14						
WATER QLTY	A	A	A						
CLASSIFICATION	CA	CA	CA						

A - Approved CA - Conditionally Approved R - Restricted
RND - Restricted/No Depuration P - Prohibited

TABLE #4

**WATER QUALITY
SAMPLING STATIONS DATA**

Shellfish Management Area 16A

BACTERIOLOGICAL DATA

Data for each shellfish station listed in this report's "Fecal Coliform Bacteriological Data Summary Table" and in other shellfish reports, can be obtained through South Carolina's Department of Health and Environmental Control - Freedom of Information office at the address below.

Freedom of Information
2600 Bull Street
Columbia, SC 29201

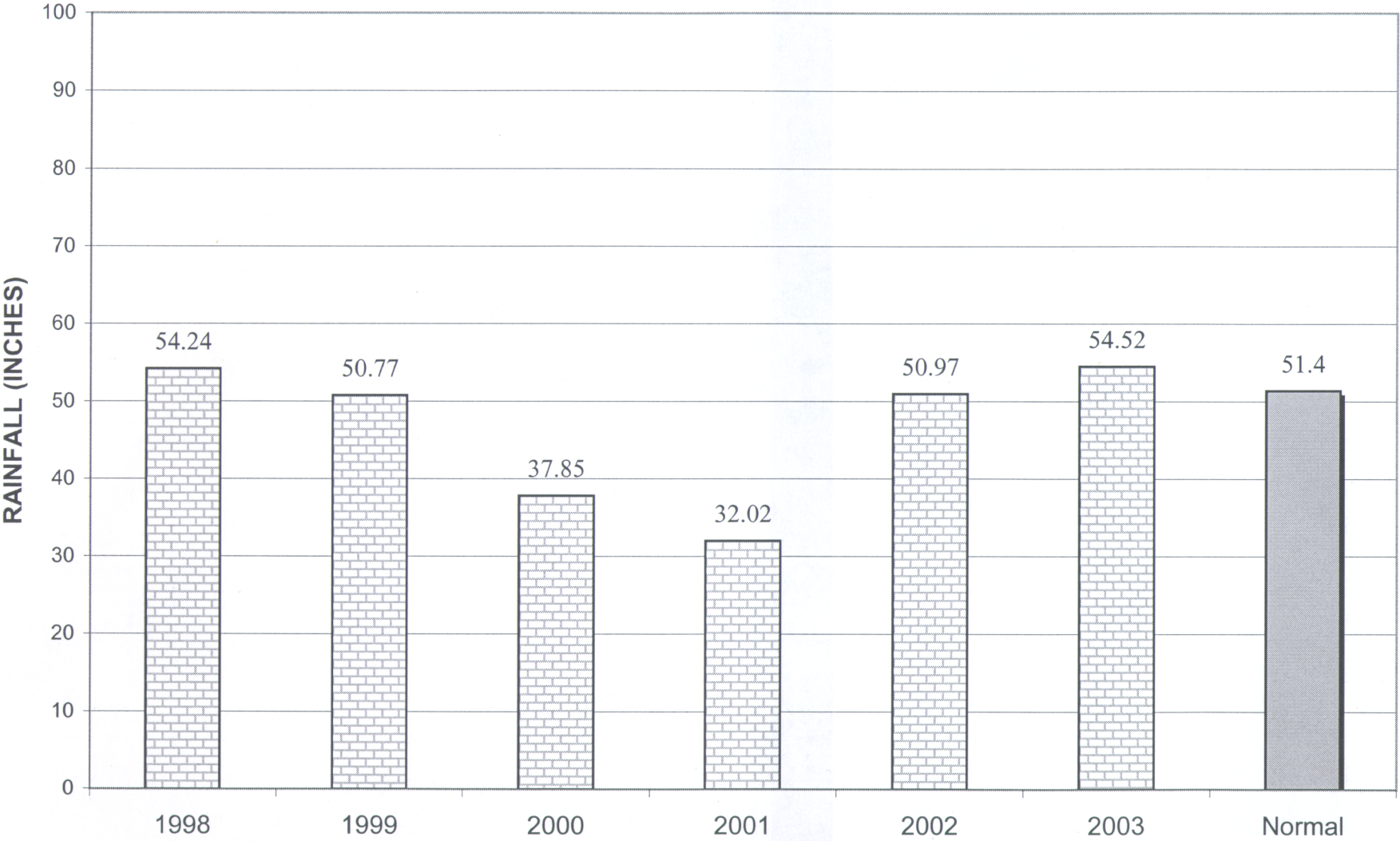
Any explanation or clarity needed on the report's content can be obtained by contacting the preparer(s), and/or reviewer(s) listed on the cover page.

TABLE #5

RAINFALL DATA

Shellfish Management Area 16A

BEAUFORT ANNUAL RAINFALL 1998-2003



ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2001	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	--	0.00	0.00	0.00
2nd	0.00	0.00	0.00	0.00	0.00	--	0.04	0.00	--	0.00	0.00	0.00
3rd	0.00	0.00	0.03	0.00	0.00	--	0.02	0.00	--	0.00	0.00	0.00
4th	0.00	0.18	0.85	0.04	0.00	0.41	0.42	0.00	0.75	0.00	0.00	0.00
5th	0.00	0.08	0.02	0.00	0.00	--	0.59	0.01	1.30	0.00	0.00	0.00
6th	0.00	0.00	0.00	0.00	0.00	--	0.00	0.10	0.13	0.00	0.00	0.00
7th	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.23	0.25	0.00	0.00
8th	0.02	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.23	0.00	0.00	0.00
9th	0.31	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.02	0.00	0.00	0.48
10th	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.02	0.05	0.00	--	0.00
11th	0.00	0.06	0.00	0.00	0.00	0.05	0.00	--	0.00	0.00	--	0.63
12th	0.10	0.70	0.00	0.00	0.00	1.30	0.00	0.00	0.05	0.02	0.00	0.06
13th	0.09	0.06	0.77	0.00	0.00	--	1.06	1.58	0.00	--	0.00	0.00
14th	0.00	0.02	0.00	0.20	0.00	0.20	0.28	0.66	0.00	--	0.00	0.00
15th	0.00	0.00	0.15	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	--
16th	0.00	0.00	0.80	0.20	0.00	--	0.00	0.00	0.00	0.00	0.00	--
17th	0.00	0.11	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	--	0.00
18th	0.03	0.00	0.00	0.00	0.00	0.04	0.00	2.37	0.00	0.00	--	0.07
19th	0.00	0.00	0.00	0.00	0.00	--	0.00	2.30	0.00	0.00	0.00	0.00
20th	0.45	0.00	1.05	0.00	0.00	0.22	0.00	0.45	0.00	--	0.00	0.00
21st	0.00	0.00	0.51	0.00	0.00	0.11	--	1.02	0.00	--	0.00	0.00
22nd	0.00	0.03	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00
23rd	0.00	0.35	0.00	0.00	0.05	0.04	0.03	0.00	--	0.00	--	0.00
24th	0.00	0.00	0.00	0.00	0.00	0.05	1.00	0.00	0.04	0.00	0.00	0.02
25th	0.00	0.00	0.01	0.00	0.00	--	1.10	0.00	0.90	0.00	0.03	0.00
26th	0.00	0.06	0.00	0.27	0.00	0.28	0.03	0.00	0.01	0.00	0.00	0.00
27th	0.00	0.00	0.00	0.00	0.00	0.28	0.08	0.00	0.00	0.00	0.00	0.00
28th	0.00	0.01	0.00	0.00	0.00	0.01	--	0.00	0.00	--	--	0.00
29th	0.00		0.21	0.00	0.00		--	0.00	0.00	0.00	0.00	0.00
30th	0.00		0.95	0.00	0.40		0.00	0.02	0.00	0.00	0.00	0.00
31st	0.80		0.03		0.00		0.00			0.00		0.00

(Monthly Figures)

Year's Rainfall Total: 32.02

SUM	1.80	1.66	5.38	0.71	0.45	3.57	4.65	8.53	3.71	0.27	0.03	1.26
MAX	0.80	0.70	1.05	0.27	0.40	1.30	1.10	2.37	1.30	0.25	0.03	0.63
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.06	0.06	0.17	0.02	0.01	0.22	0.17	0.29	0.15	0.01	0.00	0.04

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2002	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.00	0.00	0.00	2.60	0.00	0.00	--	0.81	0.65	0.05	0.00	0.00
2nd	0.10	0.00	--	0.00	0.00	0.00	0.00	0.02	0.06	0.15	0.00	0.00
3rd	0.50	--	--	0.00	0.00	0.00	0.00	--	0.16	0.00	0.00	0.00
4th	0.08	0.00	0.05	0.00	--	0.00	0.00	0.02	0.00	--	0.00	0.00
5th	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.25	0.00
6th	--	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.78	0.13
7th	0.00	1.01	0.00	0.00	0.00	0.00	--	0.49	0.00	0.02	0.04	--
8th	0.00	0.25	0.00	0.02	--	0.00	0.00	0.00	0.00	0.00	0.00	--
9th	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
10th	0.00	0.27	0.00	0.41	0.00	0.00	0.28	0.00	--	1.85	1.12	0.73
11th	0.00	0.15	0.00	0.04	0.00	0.00	0.00	0.00	0.00	--	0.00	0.35
12th	0.00	0.00	0.00	--	0.00	0.00	2.16	0.00	0.00	0.04	1.20	0.04
13th	--	0.00	0.35	0.00	0.00	0.00	--	0.00	--	0.04	0.89	0.56
14th	0.00	0.00	0.00	0.00	0.11	0.00	0.60	0.07	0.90	0.05	0.00	0.03
15th	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.02	0.00	0.00
16th	0.00	--	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17th	0.00	--	--	0.00	0.00	--	0.00	--	0.00	0.00	1.59	0.00
18th	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.25	0.22	0.00	0.03	0.00
19th	--	0.00	0.00	0.00	1.10	0.63	0.00	0.02	0.16	0.00	0.00	0.04
20th	--	0.00	0.00	0.00	0.00	3.85	--	0.00	0.11	0.00	0.00	0.20
21st	0.00	0.21	0.18	0.00	0.00	1.21	1.97	0.00	0.00	0.00	0.00	0.02
22nd	0.10	0.00	0.20	0.00	--	0.01	0.00	0.00	0.58	0.00	0.09	0.00
23rd	0.01	0.01	0.00	0.00	0.00	0.76	0.85	0.00	1.20	0.00	0.00	0.00
24th	0.00	0.04	--	0.00	0.00	0.92	0.01	0.04	0.00	0.09	0.00	0.08
25th	0.01	0.00	0.00	0.00	--	0.78	0.60	0.84	0.84	0.09	0.00	1.33
26th	0.14	0.00	0.00	--	0.00	0.01	0.00	0.30	0.51	0.00	0.00	0.00
27th	0.00	0.00	0.48	--	0.00	0.00	0.00	--	--	0.00	0.00	0.00
28th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	--	0.49	0.00	0.00
29th	0.00		0.00	0.00	0.00		0.00	2.23	2.05	0.38	0.00	0.00
30th	0.00		0.00		0.00		0.00	1.50		0.00	0.00	0.00
31st	0.00		--		0.00		0.00					0.00

(Monthly Figures)

Year's Rainfall Total: 50.97

SUM	1.34	1.96	1.29	3.14	1.21	8.19	6.48	6.59	8.00	3.27	5.99	3.51
MAX	0.50	1.01	0.48	2.60	1.10	3.85	2.16	2.23	2.05	1.85	1.59	1.33
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.05	0.08	0.05	0.12	0.04	0.30	0.24	0.26	0.32	0.12	0.20	0.13

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

ANNUAL TABLE OF DAILY RAINFALL DATA

SOURCE: City of Beaufort Wastewater Treatment Plant

Beaufort, SC (Station #380559 / 7-SW)

2003	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1st	0.32	0.00	0.00	0.00	0.00	1.00	0.02	0.00	0.22	0.00	0.00	0.00
2nd	0.00	0.00	0.47	0.00	0.00	0.00	0.61	0.14	0.00	0.00	0.00	0.00
3rd	0.00	0.00	0.01	0.00	0.10	0.00	0.84	0.00	0.00	0.00	0.00	0.00
4th	0.00	0.02	0.33	0.00	0.03	0.86	0.00	0.00	0.03	0.00	0.06	0.47
5th	0.00	0.03	0.08	0.00	0.00	0.51	0.03	0.56	0.02	0.00	0.05	0.44
6th	0.00	0.00	0.02	0.03	0.00	0.00	0.01	0.00	2.10	0.00	0.00	0.00
7th	0.00	0.42	1.04	0.09	0.43	0.16	0.00	0.30	0.15	0.01	0.00	0.00
8th	0.00	0.03	0.55	0.96	0.00	0.70	0.05	0.00	0.27	0.02	0.00	0.00
9th	0.00	0.00	0.02	1.26	0.00	0.36	0.00	0.00	0.15	0.07	0.00	0.00
10th	0.00	0.12	0.01	0.72	0.00	0.00	0.00	0.04	0.04	0.00	0.00	0.00
11th	0.00	0.31	0.00	0.15	0.00	0.00	0.00	0.02	0.00	0.02	0.00	--
12th	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13th	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00
14th	0.00	0.00	0.56	0.00	0.00	0.66	0.11	0.00	0.00	0.00	0.00	0.33
15th	0.00	0.00	0.21	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00
16th	0.00	0.00	0.15	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17th	0.00	1.40	0.02	0.00	0.12	0.25	0.00	0.08	0.00	0.00	0.00	0.02
18th	0.00	0.05	0.38	0.00	1.92	0.26	0.00	0.36	0.00	0.07	0.00	0.00
19th	0.00	0.00	0.10	0.00	2.80	1.14	0.00	2.42	0.00	0.00	0.00	0.00
20th	0.00	0.00	0.11	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.36	0.00
21st	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00
22nd	0.03	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23rd	0.23	0.58	0.00	0.00	3.01	0.00	0.00	0.00	0.25	0.00	0.00	0.00
24th	0.00	0.00	0.00	0.00	0.00	0.00	1.85	0.00	0.05	0.00	0.00	0.04
25th	0.00	0.00	0.00	0.00	0.04	0.00	1.29	0.16	0.00	0.00	0.00	0.00
26th	0.00	0.00	0.00	1.34	0.16	0.00	0.62	0.51	0.00	0.00	0.00	0.00
27th	0.00	0.45	0.00	0.46	0.11	0.00	0.20	0.03	0.00	0.00	0.00	0.00
28th	0.00	0.09	0.01	0.00	0.00	0.00	0.63	0.00	0.00	0.25	0.00	0.00
29th	0.00		0.00	0.00	0.00	1.00	0.36	0.00	0.00	2.60	0.21	0.00
30th	0.00		0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
31st	0.00		0.30		0.00		0.00	0.00		0.00		0.00

(Monthly Figures)

Year's Rainfall Total: 54.52

SUM	0.58	3.52	4.75	5.08	9.00	7.05	11.17	5.07	3.28	3.04	0.68	1.30
MAX	0.32	1.40	1.04	1.34	3.01	1.14	3.95	2.42	2.10	2.60	0.36	0.47
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AVG	0.02	0.13	0.15	0.17	0.29	0.24	0.36	0.16	0.11	0.10	0.02	0.04

Note:"--" denotes missing data

(Shellfish Management Areas 14, 15, 16A, 16B, 17, 18, 19)

Shellfish Management Area 16A
A SUMMARY OF RAINFALL
During and Prior To Fecal Coliform Sampling

Sample Date	Sample Date + 24 hours	Sample Date	Sample Date - 24 hours	Sample Date - 48 hours	Sample Date - 72 hours
01/22/01	0.00"	0.00"	0.00"	0.45"	0.00"
02/05/01	0.00"	0.08"	0.18"	0.00"	0.00"
03/19/01	1.05"	0.00"	0.00"	0.00"	0.80"
04/25/01	0.27"	0.00"	0.00"	0.00"	0.00"
05/02/01	0.00"	0.00"	0.00"	0.00"	0.00"
06/18/01	no data	no data	no data	no data	0.20"
07/10/01	0.00"	0.00"	0.00"	0.00"	0.00"
08/20/01	0.45"	2.30"	2.37"	0.00"	0.00"
09/12/01	0.00"	0.05"	0.00"	0.05"	0.02"
10/08/01	0.00"	0.00"	0.25"	0.00"	0.00"
11/13/01	0.00"	0.00"	0.00"	no data	no data
12/19/01	0.00"	0.00"	0.07"	0.00"	no data
01/07/02	0.00"	0.00"	no data	no data	0.08"
02/25/02	0.00"	0.00"	0.04"	0.01"	0.00"
03/05/02	0.00"	0.00"	0.05"	no data	no data
04/08/02	0.02"	0.00"	0.00"	no data	0.00"
05/14/02	0.00"	0.11"	0.00"	0.00"	0.00"
06/11/02	0.00"	0.00"	0.00"	0.00"	0.00"
07/15/02	0.00"	0.00"	0.6"	no data	2.16"
08/05/02	0.00"	no data	0.02"	no data	0.02"
09/10/02	0.00"	no data	0.00"	0.00"	0.00"
10/07/02	0.02"	0.00"	no data	no data	no data
11/12/02	0.89"	1.2"	0.00"	1.12"	0.00"
12/04/02	0.00"	0.00"	0.00"	0.00"	0.00"
01/21/03	0.03"	0.00"	0.00"	0.00"	0.00"
02/24/03	0.00"	0.00"	0.58"	0.02"	0.00"
03/05/03	0.02"	0.08"	0.33"	0.01"	0.47"
04/08/03	1.26"	0.96"	0.09"	0.03"	0.00"
05/19/03	0.00"	2.80"	1.92"	0.12"	0.20"
06/02/03	0.00"	0.00"	1.00"	0.00"	0.00"
07/23/03	1.85"	0.00"	0.00"	0.00"	3.95"
08/12/03	0.00"	0.00"	0.02"	0.04"	0.00"
09/09/03	0.04"	0.15"	0.27"	0.15"	2.10"
10/06/03	0.01"	0.00"	0.00"	0.00"	0.00"
11/12/03	0.00"	0.00"	0.00"	0.00"	0.00"
12/10/03	no data	no data	0.00"	0.00"	0.00"

Amounts shown are per Day, not cumulative / Station 380559 - Beaufort 7 - SW

CONDITIONAL AREAS MANAGEMENT PLAN

Shellfish Management Area 16A

Shellfish Management Area 16A
CONDITIONAL AREA MANAGEMENT PLAN

LUCY POINT CREEK
July, 2004

I. AREA DESCRIPTION

The Area 16A 2004 Annual Update includes pertinent information concerning the Lucy Point Creek Conditionally Approved area. Classification maps reflecting the Conditionally Approved area boundaries are included in the annual report. The Conditionally Approved area is described as;

Lucy Point Creek, from its confluence with Coosaw River to station 13A.

Lucy Point Creek is located within the Morgan River State Shellfish Ground (S-124).

In the Area 16A 2004 Annual Update, water quality at Station 13 - Lucy Point Creek at Rock Springs Creek - met the statistical criteria for a Restricted classification, with an estimated ninetieth percentile MPN value of 78. Comparison of fecal coliform bacteriological data with various rainfall conditions was conducted for the period Jan 2001 through December 2003. Excluding sample results that had 24-hour rainfall amounts greater than or equal to 1.00 inches on the day of sampling or within 72 hours of sampling, the analysis demonstrates that Station 13 should meet Approved criteria when managed according to the Conditional Area Management Plan (Table 3, Area 16A Annual Report).

There are no mariculture operations in the area, therefore year round harvesting does not occur. The harvesting season is from September 16 through May 15.

II. FACTORS INDICATING SUITABILITY OF LUCY POINT CREEK AS A CONDITIONALLY APPROVED AREA

- A. The major pollution source adversely affecting water quality in Lucy Point Creek is nonpoint source in origin.
- C. Lucy Point Creek receives no substantial freshwater input other than from rainfall and associated runoff.
- D. Lucy Point Creek has a tidal range that facilitates sufficient exchange with coastal ocean waters. This exchange results in a typical salinity range of 16 ppt to 35 ppt. Depressed salinities due to rainfall are temporary.
- E. Lucy Point Creek is relatively small geographically and does not present major patrol difficulties.

III. PREDICTABLE POLLUTION EVENTS THAT CAUSE CLOSURE

A. Meteorological Events

1. The Lucy Point Creek Conditionally Approved area will be closed upon receipt of 1.00" or more of rainfall, as measured at weather station 380559- Beaufort 7 SW, located at the BJW&SA Southside WWTP.
2. A review of rainfall data for the past five years (1999 to 2003) indicates that the area will receive an average of 5.6 rainfall events per year equal to or greater than 1.00" between September 16 and May 15. Although some events are likely to crossover, each event is considered to be separated from the subsequent event by a minimum duration of 14 days. With this in mind, one could expect the Conditionally Approved area in Lucy Point Creek to remain in an open status 67.6% (164days) of the harvest season (September 16 through May 15; a total of 242 days).

Number of 24- hour Rainfall events > 1.00 inches Sept. 16 to May 15

1999	8
2000	5
2001	1
2002	9
2003	<u>5</u>
Total	28 / 5yrs = 5.6 days/yr.

5.6 x 14 day closure = 78.4 days closed/yr.

(78.4 / 242 days in harvest season= 32.4% closed, 67.6% open)

B. Seasonal Events

Any significant input from migratory waterfowl populations is offset by tidal flushing.

IV. IMPLEMENTATION OF A CONDITIONAL AREA CLOSURE

The Low Country EQC District Shellfish Program manager is the responsible party for determining compliance with all aspects of this plan, including the tracking of rainfall criteria violations. In the event that the manager shall be unavailable, a responsible employee shall be designated responsibility for tracking, compliance, and notification procedures.

A. **Implementation of Closure (September through May):** The following procedures shall be used in the event a closure is necessary:

1. The State Shellfish Program Manager (or his designee) shall be notified

immediately.

2. SCDHEC's Office of Media Relations (Media Relations) is the responsible authority for issuance of news releases. Media Relations shall be notified within two hours of the determination of the need for a closure. They shall be provided with specific information regarding the pollution event and affected area. In the event of the need for a weekend or holiday closure, Low Country District Shellfish program staff will contact Media Relations through their on-call pager number or through the Department's emergency response telephone number.
3. Within four hours of a determination of the need for a closure, the Low Country District Shellfish staff shall notify the South Carolina Department of Natural Resources (SCDNR), Office of Commercial Fisheries Management, & SCDNR Law Enforcement (Ft. Johnson), by telephone and/or fax.
4. All SCDHEC Certified Shellfish Shippers with known interests in the affected area shall be notified by Low Country District Shellfish program staff. SCDNR is the State agency having authority for the issuance of individual commercial shellfish harvest permits and should provide notification to individual permittees.
5. Prior to September 16, SCDHEC shall post an adequate number of "Warning Conditional Area" signs throughout the area. Additionally, maps indicating the current condition of the affected area will be posted at locations adjacent to the area suitable for public information display. Map postings shall take place immediately following issuance of the draft news release.
6. During the closure period, a Low Country EQC District law enforcement officer shall insure patrols are conducted at a frequency sufficient to deter illegal harvest activities. Schedules shall include night and weekend patrols. Documentation of these patrols shall be maintained. Unless a sworn law enforcement officer has knowledge that a violator has been notified of the closure, under no circumstance shall a summons be issued during the first 48 hours following the initial call to Media Relations. Written warnings should be issued during this 48 hour period and all shellfish should be returned to the water.

B. Management of Conditional Areas Extraneous to the Normal Shellfish Harvest Season

The Lucy Point Wallace Creek Conditionally Approved area shall remain in the closed status from May 16 through September 15.

C. Enforcement of Closures

1. DHEC is the agency responsible for public health protection. This includes public notice and closures of shellfish management areas
2. A Low Country EQC District law enforcement officer shall insure that the area is patrolled at a frequency adequate to prevent illegal harvesting. Documentation of these patrols shall be maintained. DHEC patrol officers may coordinate with other law enforcement officers to insure adequate area coverage.

V. CONTROL ELEMENTS USED TO REOPEN AFTER A POLLUTION EVENT

Opening of areas following closure due to violation of management plan criteria shall adhere to the following control elements.

- A. The area shall remain closed for a minimum period of 14 consecutive days following the end of a rainfall event. If, during the initial closure period, a subsequent event occurs that meets the criteria for a closure, the area shall remain closed for 14 consecutive days following the occurrence of the subsequent event.
- B. The bacteriological water quality at all stations located within, or on the boundary of, the closed Conditionally Approved area shall be assessed prior to reopening. For the year 2004 report this shall include stations 13, 13A, and 13B. The area shall remain closed and be re-sampled at a later date if any sample exceeds a fecal coliform MPN of 43.
- C. Low Country District Shellfish staff and the State Shellfish Program Manager (or his designee) shall concur on the decision to reopen the area.
- D. Low Country District Shellfish shall notify SCDNR, Division of Commercial Fisheries Management, of the opening immediately following issuance of the news release.
- E. Local Certified Shellfish Shippers shall be notified by SCDHEC of the opening as soon as possible.
- F. Map postings shall be updated to reflect the open status.

VI. MANAGEMENT PLAN EVALUATION

This plan shall be evaluated once per year and included as a part of the Shellfish Management Area 16A Annual Update.